International Education

Volume 39
Issue 1 *Fall 2009*

Integrating Thinking, Art and Language in Teaching Young Children

Ping Liu
California State University, Long Beach, surisuri2000@gmail.com

INTEGRATING THINKING, ART AND LANGUAGE IN TEACHING YOUNG CHILDREN

Ping Liu
Teacher Education Department
California State University Long Beach

ABSTRACT

This study investigates learning outcomes of four-year-old children at a preschool in P. R. China. The children are educated in a school ecology designed to address cognitive, social, linguistic and psychological development, where an instructional technique, "Integrating Thinking, Art and Language" (ITAL), is applied to support them in developing multiple intelligences. A total of 67 beginning or pre-level I Chinese preschoolers participated in the study, whose learning in the first eight months under ITAL instruction is examined. Scenarios of ITAL instruction, children's samples and assessment of learning outcomes are reported and analyzed. Results indicate that the preschoolers demonstrated significant growth in art as well as other subjects, oral language expression and social interpersonal skills through producing and communicating about their artwork. Possible adjustments in applying ITAL are also suggested.

How to maximize children's learning outcomes has been one of the most important topics for educators and researchers to explore. Many aspects that may lead to better understanding about learning and teaching have been discussed and examined. Some raise the importance of making connections between students' existing knowledge or ability and new information, students' hands-on experience, and personal exploration in learning (Dewey, 1938;

Ogle, 1986, 1989; Piaget, 1969). Others argue that the impact of social interaction, culture and community on learning must be taken into consideration (Dixon-Kraus, 1996; Gleason & Ratner, 2009; Heath, 1983; Vygotsky, 1978).

The theory of multiple intelligences (MI) acknowledges various capacities that make up the mind (Gardner, 1983). It implies that distinction exists in how individuals deploy intelligences. Although an intelligence is defined as the biopsychological potential to process information in certain ways for the purpose of problem solving, the theory has an impact on the teaching and learning in the classroom. Gardner argues that people are not born with all of the intelligences that can be learned and improved. Everyone is intelligent in various ways and can develop each aspect to increase competency. For classroom application, Armstrong (1994) specifies that in the MI classroom, teachers continually shift their method of presentation from linguistic to spatial to musical, often integrating intelligences creatively. Because all intelligences can be possessed by students collectively, it is appropriate to address as many intelligences as possible in lesson planning for classroom instruction (Borek, 2003).

Campbell (1996) conducted action research in his classroom. He created seven learning centers each focusing on one of the seven intelligences and students had opportunities to rotate and complete learning tasks in these centers. "The daily work at the seven centers profoundly influences their ability to make informative, entertaining, multimodal presentations of their studies" (p. 3). The results regarding the impact on students who participated in the project include improved academic achievements, increased responsibility and independence, and improved cooperative learning skills.

Thinking is considered an important element in education, if not the most important, in the 21st century, according to Kagan (2003). Thinking is divided into three types: understanding information, manipulating information and generating information, and "information processing is the essence of thinking skills" (Kagan, 2003, p. 2). Additionally, the approaches in teaching thinking skills include the specific approach to having thinking skills embedded in the school subjects (Hamers, Luit & Csapo, 1999).

The study by Rogers (2008) examined the infusion of another intelligence or art in teaching and learning to respond to "a lack of understanding that using art in other core subjects, through arts

infused instruction, is significant" (p. 5). Children may learn differently and integration of art in teaching can serve to better facilitate student learning than traditional learning techniques such as lecturing in front of the students. In another study, Souto-Manning and James (2008) explore the application of arts in first grade classrooms to promote literacy and learning through an integrated fashion. Suggestions are provided to teachers on how to present students with learning opportunities that are meaningful and engaging.

Similarly, rhyming lyrics and rhythm can be aids to learning. Turner (2008) describes how to use memorable tunes to create lyrics as a means to learn the content of social studies. This activity leads to lessons that are not easily forgotten. Also, rhythm, rhyme and singing appear to increase learning in an environment that is filled with eye-catching posters and decorations (McIntire, 2007).

Moreover, the effect of multiple intelligences on elementary or K-6 students is summarized in the study by Johnson (2007). Findings indicate that an MI-infused curriculum serves to increase student performance and achievement as measured by standardized tests. For preschool students, numerous publications have been produced on descriptions of MI application (Hoerr, 1992; Vialle, 1997), assessment (Hafenstein & Tucker, 1994; Krechevsky, 1998), and discussion of ways to work with children of special needs (Fisher, 2001; Merrefield, 1997). A need still exists for research studies on the impact of MI-infused instruction on learning outcomes of preschool students.

Given the literature review provided above, this study examines an instructional technique, Integrating Thinking, Art and Language (ITAL), which is applied in a preschool in P. R. China to support young children's development of multiple intelligences. The primary language of instruction at the preschool is Mandarin Chinese or pu tong hua. Before more details about ITAL are introduced, it is necessary to provide an overview of the education system in China.

The primary and secondary education in China is comprised of 12 years of schooling, with six years for elementary, three years for junior high and three years for senior high school. All children of the country are entitled to nine years of compulsory education (National People's Congress, 2006), from grade 1 to 9. During the time, children complete education at elementary school (grades

1-6) and junior high school (grades 7-9). On the other hand, parents or families are primarily responsible for paying fees for their children to attend senior high school (10-12 or levels 1-3) and preschool (pre-levels 1-3). Before young children enter elementary school at the age of six or seven, their parents can enroll them at preschool for up to three years.

In China, the study of the curriculum of preschool education can be traced back to 1903 when the first public organization on preschool education was founded (Shi, 2009). However, no content standards have been developed for preschool education except a guide to curriculum (Ministry of Education, 2001). In the guide, four sections are included: overview, goals/content, educational activities planning and implementation, and evaluation. The main subjects to be taught across all pre-levels are health (including PE), social studies, sciences (including math), language and arts. Moreover, the guide highlights the importance of creating a healthy and meaningful environment to meet children's needs. Attention is directed to children's life experience to better support their learning and growth. Consequently, the guide applies to the preschool examined in this study. More details about the preschool in admission, structure, teaching schedule and other local and background information will be presented in "participants" in the "research methods" section of this article.

In alignment with the abovementioned guide to curriculum, ITAL is designed to address the development of drawing, rhyme saying and thinking as well as communication simultaneously. It is utilized to help children develop coordination of motor skills, language proficiency, artistic competence and thinking ability, and nurture the development of their creativity through the learning of content areas such as science, social studies and math.

Additionally, ITAL is applied in a school environment where teachers make connections not only individually but also through collaboration and teamwork. They are able to weave a web of connections by creating a "school ecology" within and across grade or age levels to help children develop their own world of connections. The school ecology is defined as "all tangible environmental variables contextually organized in and outside of classrooms at a school, which are closely connected to curriculum and instruction and can affect teaching effectiveness as well as cognitive, social and psychological development of students" (p. 119, Liu, 2002). Also,

this ecology is built on a theme of love.

Set in such a learning environment, ITAL is applied as a primary means on a daily basis to reach educational goals and objectives. An ITAL lesson can be developed to promote love and self-confidence, and it can also be used to support children'sdevelopment in multiple intelligences and learning of different subjects. Through ITAL lesson planning, teachers participate in on-going professional development to improve the quality of their instruction. Two examples of its application are provided to illustrate how teaching and learning actually take place at the preschool.

SAMPLE 1

In this ITAL scenario (see Figure 1), children learn to draw a flower by referring to several items associated with dining: a plate, an egg, a chopstick and two slices of bread. Children are exposed to these items practically on a daily basis. There are several characteristics that are embedded in this application, which deserves more detailed discussion:

- Developmental and Cultural Appropriateness: When items familiar to all children are used, a drawing task that can be complex and abstract is made concrete and manageable. Children see, use or eat these items at home and at the preschool. Furthermore, the relationship in terms of size among these items is clearly presented to put the items harmoniously together for a picture of a flower. It is not difficult for young children to understand that a dinner plate is much bigger than an egg that is smaller than a slice of bread. When a teacher provides feedback for revision, her message can be simple and direct, such as having children take another look at the proportion and make adjustments accordingly.

- Simultaneous Development of Thinking, Oral Language and Drawing: When a teacher demonstrates how to draw a flower by using the above procedures, s/he shows how to combine oral language, thinking and drawing to arrive at the end product of a flower. The simultaneous processing of the three components can support children's development in coordination, add meaning to the task and make the task manageable. In applying ITAL, children are guided to think how to complete the task successfully by making use of what they know while learning new concepts. The use of the rhymes helps them think clearly, and their drawing actions are

expressions or reflections of what they think and say. Moreover, they learn to communicate with others about what and/or how they do.

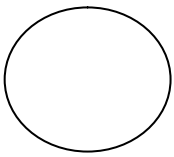
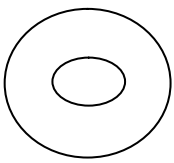
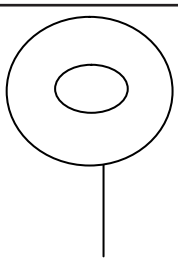
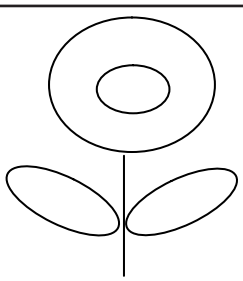
Rhyme (that children say to help them think and complete the task)	Action of Drawing
In the middle of a big plate	
Is a little boiled egg,	
Use a chopstick to hold the plate,	
And add two slices of bread to the left and right, it makes a flower happy and bright.	

Figure 1. Flower Drawing Activity. This figure illustrates how children learn to draw a flower by referring to items associated with dining.

- Development of Drawing Skill and Preparation for Chinese Character Writing: The procedures offer step-by-step directions for children to put parts together in a directionality from top to bottom and from left to right. Since this directionality is a perfect match with that in the writing of Chinese characters, what children gain from this drawing activity can also prepare them for Chinese lit-

eracy development in the near future.

- Cross Curricular Instruction: When children are competent in drawing a flower that is accompanied by rhyme reciting and thinking, their artwork can become a springboard of numerous learning activities in math, science and social studies. For instance, from flowers, seasons can become a new learning topic, in which children not only learn about spring and seasonal change but also engage in new ITAL activities to learn how to draw the sun, bird and butterflies. A math lesson of single digit addition can be developed to use the above pictures in a natural context (The sun shines brightly in the sky. Flowers are nodding and grass is smiling. Butterflies are dancing in flowers and under the sun.) to count butterflies in different ways (by color, size, position etc.). As a result, integration of various subjects is made possible in the application of ITAL.

SAMPLE 2

In another ITAL example, children learn to draw a chick and a duckling (see Graphic 1.b) while they use the rhymes that help them complete the task:

Duckling
A big circle for head and small for eyes,
With a body like a boat floating and sailing,
Quack and quack,
I swim in the pond to go fishing.

Chick (see Figure 2)
A small circle for head with eyes tiny and round,
Add a big circle for body and arrows (triangles) for beaks.
Walking on chopstick legs and forked claws,
I search for worms in the grass.

In drawing the above two animals, children are taught to use line, shapes and sizes to complete their artwork. This allows them to review the math concepts in an artistic context and use a proper sequence to arrange parts in the drawing.

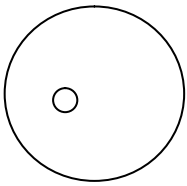
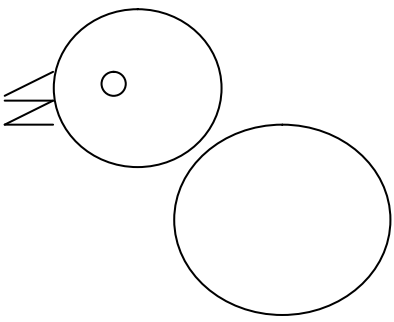
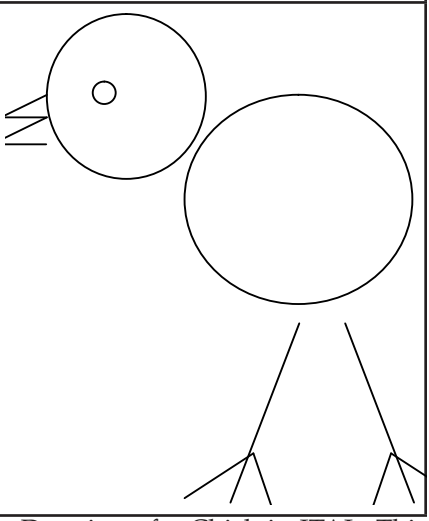
Rhyme (to help children them think and complete the task)	Action of Drawing
A small circle for head with eyes tiny and round,	
Add a big circle for body and arrows (triangles) for beaks,	
Walking on chopstick legs and forked claws, I search for worms in the grass.	

Figure 2. Procedures to Complete the Drawing of a Chick in ITAL. This figure illustrates how children are taught to use lines, shapes and sizes to complete their artwork.

Moreover, they also learn through the rhymes about scientific information of the two animals such as their physical characteristics, living environments and food. Children are asked to pay special attention to the differences between a chick and a duckling in draw-

ing through the use of oral language.

After the children finish their artwork, they are guided to discuss the characteristics of the two animals. What follows is a fantasy story entitled "The Chick and Duckling" that tells how the two help each other using their special talents. A chick is good at catching worms in the grass with its pointed beaks while a duckling is an expert in fishing. Children learn the moral value that everyone is special and can make a contribution; they are also taught the importance of friendship and collaboration. Through this activity, objectives in art, language arts, social relationships and science through the application of existing math concepts can be achieved simultaneously, while addressing children's development of self-esteem and respect for each other.

The above two examples show that the children are provided with opportunities to develop multiple intelligences under ITAL instruction. Instead of using assessments to measure children's growth in multiple intelligences, the teachers set up instructional goals to support children's learning and intelligences development simultaneously based on concepts and subjects. More importantly, although the ITAL activity was initiated by teachers using their creativity, children were not expected to simply imitate or mimic teachers. In fact, it is a crucial component in ITAL to nurture children's thinking ability, and the activities can serve to help young children understand the relationship among many pieces or variables that are connected sensibly in a context. When children are in more advanced classes, the preparation enables them to use their creative skills to draw and create rhymes for their own artwork.

Therefore, this study was designed to examine the learning outcomes of the children under ITAL instruction. The following research question was sought: Do children demonstrate higher competence and ability in drawing and communicating what they draw in the post assessment compared to their performance in the pre-assessment?

RESEARCH METHODOLOGY

Research Design

The t test for the differences between means (Johnson & Christensen, 2004) was applied to examine the learning of beginning or level I children aged three to four over an eight-month period in the

first year of their enrollment at the preschool. A pretest and a posttest were administered respectively to produce two sets of scores for comparison. The pretest was given three weeks after children were admitted to the school, while the posttest was administered about eight months after the administration of the pretest. A paired t test statistical technique was applied to compute the difference between the two sets of scores. A two-tailed test of significance was set for the t test.

In addition to the above application of statistical technique, qualitative analysis is also provided based on observation of children's performance or behavior during assessment including children's sample work. The author also accumulated about 15 hours of classroom observation by the end of data collection. It is hoped that the qualitative information can be presented to make the quantitative information more meaningful in order to better understand children's development in learning.

Participants

Each year, three- to four-year-old children enter the preschool in mid-September to embark on learning at one of three preschool pre-level I classes. In the second and third years at the school, these children move on to pre-levels II & III respectively before they become first graders at elementary school. The participants of this study were all new incoming children who started their learning at the preschool. The total number of participants is 67 in three classes with a class average of 22 in the pretest, but the total number of children reached about 90 when the posttest took place. Due to the research design, children who were admitted after the pretest administration are not included in the study.

The children's school day started at 7:10 am when their parents dropped them off at the preschool for breakfast. Instruction did not start until 9:00 am with four class periods of formal instruction scheduled daily. All these classes shared the same teaching schedule. The subjects that children learned were Chinese language, math (abacus), physical education, English, social studies, science, music, art/creativity, computer, and resources sharing. Creativity class was designed by individual teachers to help children develop creative ability, while sharing resources was an activity for all teachers and children of pre-level I to present what they had created or learned during a week, which took place Friday afternoons. Chil-

dren were gradually dismissed starting at 4:30 pm when they went home with their parents, grandparents or other guardians. There was no school on Saturdays and Sundays.

The children were from families in the surrounding neighborhood. Their parents were mostly government employees, teachers, and private business owners. The parents were invited to participate in various events such as open houses, lectures, teaching/learning demonstrations, and children's performing art shows organized by the preschool. During each academic semester, parents attended three teacher-parent meetings that were class based in addition to a school-wide meeting once a year. Parents received information about their children's learning and performance at school, were introduced to the curriculum, and were expected to cooperate with the teachers to provide home support. Therefore, home-school connection was emphasized at the school.

Assessment

Assessment or informal testing is designed to evaluate learning outcomes of children in drawing and oral communication after they receive ITAL instruction for a duration of eight months. In the assessment, children were asked 1) to draw a picture of their choice or their favorite picture and 2) to talk about or describe the picture they drew. In doing this activity, children were expected to demonstrate their competence in drawing and oral language proficiency, as well as their social ability, by describing the picture they drew. The same instrument was used for pre- and post assessments.

Testing Procedures

The reception room of the preschool, closest to the three level I classrooms in distance, was used as the assessment site. A table was placed away from the entrance of the room to minimize any possible distractions from the hallway. Across from the evaluator, two chairs were placed, one for a child and the other for a teaching assistant. Children were pulled out of their classrooms one at a time, and each one of them was accompanied by a teaching assistant to the assessment site.

After the teaching assistant and child were greeted and seated, the teaching assistant would encourage the child to say hello back if s/he did not respond voluntarily. The evaluator asked the child to say his/her name and then invited the child to participate in "game

playing." During the assessment, the teaching assistant sat next to the child but would not talk unless there was a need to talk to the child into cooperation.

A child was asked to draw his/her "favorite" picture or anything s/he liked. No time limit was set to complete the task. After the child finished drawing, s/he was asked to talk about the picture that was drawn. The oral description was audio-taped for after-test analysis. It took about 15 minutes to complete the process with a child, and each received a sticker as reward for "playing games" with the evaluator before returning to the home classroom with the teaching assistant.

Data collection for the pre-assessment was completed during the third week in October of Year 1. The testing was arranged from 8:00 to 11:00 am and from 2:00 to 4:00 pm of a school day. The post assessment was completed in June of Year 2 or about eight months after the administration of the pretest. The same testing content and procedures applied to both assessments.

Scoring

The "Rubric to Score Children's Drawing" (Appendix A) was developed to evaluate the quality of children's drawing or artwork on a 0 to 3 scale. In oral language communication, a child can receive a score from 0 to 3 on the "Rubric to Score Children's Oral Communication about Drawing" based on their performance in communicating about their artwork (Appendix B).

Two raters graded the products resulted from the assessments. They discussed each item in the rubric and rated several samples for the purpose of establishing inter-rater reliability. Then, they scored all of the samples independently and compared their scoring results. When there was a clear discrepancy in scoring a sample, the raters discussed why they rated differently until some general consensus was reached. Children's samples in the pretest and posttest were also compared to ensure within-subject consistency.

RESULTS

The data was analyzed both quantitatively and qualitatively. Two sets of scores were obtained by evaluating children's performance each in the pretest and posttest to measure children's growth during the specified period of time. In the meantime, stu-

dent samples are also used to showcase the changes in pre- and post-instruction student performances during the time. In addition, student behaviors are analyzed to reveal students' ability in communication.

A statistical method of paired t test was computed on the Statistical Package for the Social Sciences SPSS 10.2, PC version. The descriptive statistics of the scores are presented in Table 1.

Table 1: Descriptive Statistics: Pretest and Posttest Scores*

	N	Minimum	Maximum	Mean	SD
Pretest	67	.00	5.00	2.54	1.07
Posttest	59	.00	6.00	4.56	1.31

*Valid N: 59

As Table 1 shows, 59 children participated in both assessments. Among the group of children, the minimum score remains the same for both tests, while the maximum score shows an increase of one point in the posttest compared to the pretest. However, an examination of the means shows a significant improvement in the posttest and their average score in the posttest shows an increase of 2.02 points. When the highest possible scores of 6 points are converted to percentage, the level of progress children made in their performance is 34%. Similarly, the improvements in students' performance are confirmed by the paired t-test results displayed in Table 2. The pair of test scores is significantly different at the significance level of .01 (p value>.001).

Table 2: The t Test Results of the Pretest and Posttest Scores

	Mean (Paired Differ.)	SD (Paired Differ.)	df	t
Pair: Pre/ Post	1.949	1.613	58	9.28*

*Significance level p<.001

In the level of participation, of the 67 children who took the pretest, eight children were not available at the posttest either due to family relocation or absence. Almost all of the children who took the posttest were cooperative. However, in the pretest, six children

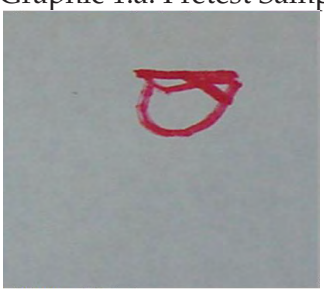
(or 10%) were not able to respond or participate at all. Thirteen children (or 22%) were not able to produce a picture or say anything about their artwork. In comparison, only one child was cooperative in the pretest but did not respond in the posttest because she was not in the mood rather than because of lack of ability or competence. Only three children (or 5%) were not able to name or say anything about the picture they each drew.

The examples of two children, Lily and Bin (pseudonyms), are used to illustrate what they learned during the time, as revealed by the assessments. Based on their performance or scores, these two children can best serve as representatives in growth and gender equity to showcase the overall growth of the children enrolled in the three classes of level I.

Sample Work of Lily

Graphic 1.a. was produced by Lily when she met with the evaluator at the beginning of the year. Lily was accompanied by the teaching assistant during the meeting. After the evaluator said "hello," to Lily, she smiled but did not greet back. She was able to cooperate in following instructions with the assistance and encouragement from the teaching assistant and produce a picture silently. When Lily was asked to tell a story about her artwork, she simply said "pocket." She shook her head when she was encouraged to tell more about her picture. After she received a sticker as a reward for completing the task, Lily smiled again and returned to her classroom with the teaching assistant.

Graphic 1.a: Pretest Sample by Lily



Oral Response: "Pocket."

When the evaluator saw Lily again eight months later, she replied to the greeting without being asked to do so. When she was

invited to demonstrate what she learned in art, she appeared confident and enthusiastic. She chose a colored pencil and produced a picture of a duckling (see Graphic 1.b), while orally using the rhyme that helped her to complete the artwork. Then, she verbally entitled the picture, "xiao ya zi" ("duckling" in Chinese) and created a story for her picture: "This is a duckling. He sets off to catch fish." When she was given a sticker for reward, she voluntarily said, "Thank you" to express her appreciation and said "bye-bye" before leaving the room.

Graphic 1.b: Posttest Sample by Lily

Oral Response: "It's a duckling. He sets off to catch fish."

Sample Work of Bin:

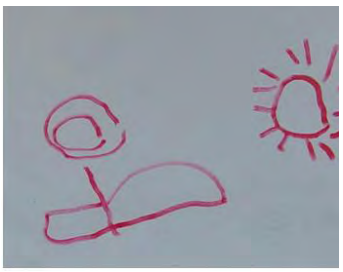
Graphic 2.a. was produced by Bin at his first meeting with the evaluator at the beginning of the year. Bin was also accompanied by the teaching assistant during the meeting. After the evaluator greeted Bin, he looked up but did not say anything even after the teaching assistant encouraged him to greet back. He listened when the evaluator asked him to demonstrate what he would like to draw but did not take any actions. Bin did not start to draw until after the teaching assistant helped him choose a colored pencil and put it in his hand. After he completed his drawing, Bin was neither able to entitle nor tell a story about his artwork. As Graphic 2.a indicates, random scribbling was what the child was able to do for his artwork at that time. Bin appeared happy to receive the sticker but did not say "thank you" or "goodbye" before he left for his classroom with the teaching assistant.

Graphic 2.a: Pretest Sample by Bin

Oral Responses: None

By the time of the second visit, Bin was able to draw a neat picture of a flower (see Graphic 2.b). In addition, he not only named the picture correctly but also used a rhyme to describe how he drew the flower. After he completed the first artwork, Bin politely asked for permission to draw another picture or the sun and provided an appropriate oral description of it after completion of his second drawing.

Graphic 2.b: Posttest Sample by Bin



Oral Response: " A flower. In the middle of a big plate, I put a little boiled egg. When I use a chopstick to hold the plate, and add two pieces of bread to the left and right, it makes a flower happy and bright.

DISCUSSION

The participating children received education in an environment that features a teaching technique to actively engage them in learning to develop multiple intelligences. They were guided to

learn new concepts that are well connected to their prior knowledge or learning (Olge, 1986; Piaget, 1969; Vygostsky, 1978) to perform tasks competently. What they learned was also culturally relevant and connected to communities (Heath, 1983), which makes their learning more meaningful. Moreover, their personal exploration (Dewey, 1938) is supported by scaffolding provided by their teachers.

The results in this study clearly indicate that the group of children made significant progress in learning during the eight-month period when they received ITAL instruction. The improvement is reflected in the differences between assessments of student ability in drawing and communicating the artwork they produced. Therefore, the answer to the research question is: Level I children showed much higher performance in the post assessment compared to that in the pre-assessment. The growth in learning that the children demonstrated in scores is also strongly supported by case analysis of children's response between the assessments.

From the two children's samples reported above, the growth that children demonstrated in their performance over an eight month period is significant in drawing and oral language or story telling. In the pre-assessment, neither of the children revealed particular skill in the area covered by the ITAL instruction but after eight months of learning at the preschool, the children were able to make good use of what they had learned under ITAL instruction to successfully perform the tasks. This indicates that intelligences can be learned and improved (Gardner, 1983); not only do teachers plan and shift intelligences in teaching (Borek, 2003; Armstrong, 1994) but these students also demonstrated various intelligences in performing tasks. The growth shown by these two children, Lily and Bin, is a good representation of the group, which is used for further discussion of their learning.

Lily's samples show that her significant growth in art is evident. At the beginning, she produced a picture that can hardly be recognized or interpreted by others. In comparison, the duckling she drew eight months later was neat, vivid and proportionate, demonstrating her significant growth in using art to present her learning in a clear and meaningful way. Moreover, she made major progress in orally describing her artwork, from naming the artwork (difficult for others to understand or interpret) to entitling the story and using two complete sentences to describe her picture ap-

propriately. Her expressions clearly show that she used standard language to convey scientific information based on her artwork, and she demonstrated her learning outcomes in language, art and science. Lastly, Lily's comfort level of communicating with others was also much higher as indicated by the increase of proper social behaviors such as greeting and expressing gratitude.

For Bin, although his oral production was not creative, he was able to orally describe how he produced his work. Bin used the rhyme to show that he understood connections between the rhyme and the drawing task, and was able to use the rhyme to support his successful completion of the artwork. He appeared so proud of himself and eager to show more about what he had learned that he asked for permission to draw the sun next to the flower. Again by using a rhyme he learned in class, he finished the task successfully. His artwork indicates that he grew significantly in his awareness of space and proportion and demonstrated good muscle control in producing his work.

In sum, from the two children's sample work above and change of behaviors in social interaction, the impact of ITAL on their growth cannot be underestimated. At the beginning of their enrollment, they produced "artwork" that was either scribbling or something hardly comprehensible or interpretable to observers; they were also not able to orally communicate their artistic products. In contrast, the artwork they produced eight months later had clear presentations that could be easily understood by others even without any oral explanation. In addition, the children were also able to use complete sentences or rhymes to either tell a story, describe how to complete the artwork, or explain what the artwork was about. Finally, their growth in social interaction was not only reflected in their ability in communicating about their artwork in a meaningful way but they also demonstrated appropriate social behaviors such as greeting, expressing gratitude or asking for permission politely.

Findings indicate significant improvement in the children's overall participation in the post assessment. They demonstrated growth in socialization and reduction of intimidation in communication with the evaluator who had very limited contact with them besides administering assessments and being an independent observer at the back of their classrooms. However, it does not seem clear that the progress in children's social skills or higher level of

participation was solely a result of the ITAL application. It could be that the children's competence in drawing with ITAL allowed them to be more communicative and sociable. Perhaps, learning outcomes are affected when these two aspects interact with each other.

Additionally, the children's behaviors demonstrated in the post assessment are confirmed in classroom observation when the children actively and enthusiastically responded to instruction that integrates thinking (Hammers, Luit & Csapos, 1999; Kagan, 2003), art (Rogers, 2008; Souto-Manning & James, 2008) and rhyme saying (McIntire, 2007; Turner, 2008). Why were these young children able to actively participate in learning? An examination of the ITAL and the overall school ecology reveals that children were naturally engaged in saying, singing, dancing, drawing, and interacting throughout a lesson that is developmentally appropriate. Despite the fact that some children had special education needs and could easily be distracted, they were able to pay attention to a lesson that creates an opportunity for them to actively engage in thinking, saying, drawing and communicating.

In discussing the learning of these beginning level preschool children in China, it is important to keep in mind that their competence achieved at the end of the year actually meets relevant Kindergarten content standards in California (see Table 3). "To be admitted to kindergarten, a child must reach the age of five on or before December 2 of the current school year" (California Department of Education, 2009). In other words, these children were able to successfully complete academic tasks that are well above their age and yet they did it so well and competently.

Table 3: Competence demonstrated by the beginning level preschool children as measured by California Content Standards, Kindergarten

Subject	Strand	Standard
Language arts	Listening & Speaking Strategies and Applications	1.1 Understand and follow one- and two-step directions 1.2 Speak audibly in complete sentences. 2.1 Describe people, places, things, locations and actions. 2.2 Recite short poems, rhymes, and songs.
Math	Algebra and Functions Statistics, Data Analysis, and Probability	1.1 Identify, sort and classify objects by attributes such as shape, size, etc. 1.2 Identify, describe, and extend simple patterns (such as circles or triangles) by referring to their shapes, sizes, or colors.
Science	Life Sciences	2.b. Students know stories sometimes give plants and animals attributes they do not really have. 2.c. Students know how to identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, legs).

Possible adjustments in applying ITAL

Despite the fact that language development is a key component in the application of ITAL, an emphasis is rather placed on oral language or listening and speaking. Throughout observation of classroom instruction in this study, no presence of literacy was available. When teachers engaged students in learning activities, no text or books, not even key words, were provided for language exposure. This apparently precludes students from becoming familiar with print; furthermore, teachers also miss an opportunity to model directionality during teaching. Otherwise, students can be better prepared to become competent readers in the future. An explanation from the school administrators and teachers to this text exclusion is that print is not required in the curriculum guide of preschool. If some flexibility is allowed in interpreting and applying the curriculum guide, students can have access to a richer learning environment with presence of text and print. Additionally, such an adjustment can also help teachers better serve students with different needs.

Limitations of the study

Although the content standards of kindergarten in California were used to illustrate that the preschool children were competent to complete tasks that are expected at a higher grade level, no children who receive instruction in other educational settings or preschools were examined in this study. The impact of ITAL on children's learning can be discussed and better understood in a comparative study if two or more groups of children of the same grade or age level at other preschools or instructional settings were involved. Moreover, a follow up study on the participating children is also needed to investigate how well the education they received at the preschool prepares them for learning at elementary school or further on. A norm-referenced type of assessment can be used as data source to analyze the performance of this group of students in comparison with that of their peers. Finally, the difference between boys and girls of the group on their performance was not involved in the study. So, future studies can include gender as a variable to produce additional new information about children's learning outcomes in this instructional setting.

CONCLUSION

Under the instruction of ITAL, children made good use of the rhymes that helped them complete academic tasks. Almost all of the children precisely demonstrated how to coordinate their thinking, oral language and actions of drawing through producing their favorite artwork, which was apparently absent when they were first enrolled in the school. In this aspect, the impact of the ITAL on children's learning or learning outcomes seems prominent. Children's growth in interaction is also significant as reflected in their level of participation in talking about their drawings as well as in their social communication.

The key feature of ITAL is that children are guided to think logically and contextually. Oral language is produced to reflect organized thinking so that thinking and oral language can develop hand-in-hand. Moreover, expected output by children includes not only oral language but also an artistic product that requires motor skills and muscle coordination to reflect thinking rationally and logically in addition to communication and interaction.

For young children who are first introduced to school or formal learning, it is crucial for them to receive guidance to understand how to learn by making use of their existing knowledge. In ITAL, the rhymes along with pictures created by teachers serve to help students develop thinking skills and to create a meaningful context for their learning. Teacher's modeling was developmentally appropriate and constantly elicited students' oral, physical, mental and social participation. Learning can be effective when children understand expectations and are able to participate by making good use of their prior knowledge and abilities.

REFERENCES

Armstrong, T. (1994). Multiple intelligences in the classroom. Alexandria, Virginia: Association for Supervision and Curriculum Development (ASCD).

Borek, J. (2003). Inclusion and the multiple intelligences: Creating a student-centered curriculum. The Quarterly: 25 (4): 24-28.

California Department of Education (2009). Curriculum & Instruction (EC Section 48000[a]). Retrieved, July 30, 2009, from http://www.cde.ca.gov/ci/gs/em/kinderfaq.asp#n1

Campbell, B. (1996). "Multiple intelligences in the classroom." In Context: a quarterly of humane sustainable culture. Retrieved, July 18, 2009, from http://www.context.org/ICLIB/IC27/Campbell.htm

Dewey, J. (1938). Experience in education. New York: Collier.

Dixon-Kraus, L. (1996). Vygosky in the classroom. White Plains, NY: Longman.
Fisher, M.D. (2001). Gifted education press quarterly, 2001 (ed.). Gifted education press quarterly: 15(1-4).
Gardner, H. (1983). Frames of mind: The theory of multiple intelligences. New York: Basic Books.
Gleason, J. B. & Ratner, N. B. (2009). The development of language (7th ed.). Boston: Pearson.
Hafenstein, N. L & Tucker, B (1994). Performance-based assessment: an alternative assessment process for young gifted children. ERIC Report: ED370994.
Hamers, J. H. M., Luit, J. E. H. & Csapo, B. (Eds.) (1999). Teaching and learning thinking skills. Swets & Zeitlinger Publishers: Lisse, Netherlands.
Heath, S. B. (1983). Research currents: A lot of talk about nothing. Language Arts, 60: 999-1007.
Hoerr, H. R. (1992). How our school applied multiple intelligences theory. Educational Leadership, 50 (2): 67-68.
Johnson, B. & Christensen, L. (2004). Educational research: Quantitative, qualitative, and mixed approaches (2nd ed.) Pearson Education: Boston, MA.
Johnson, M. (2007). An extended literature review: The effect of multiple intelligences on elementary student performance. MS. Thesis, School of Education, Dominican University of California, San Rafael, CA.
Kagan, S. (2003). 'Kagan Structures for Thinking Skills', retrieved July 17 2009 from http://www.kaganonline.com/KaganClub/FreeArticles/ASK22.html
Krechevsky, M. (1998). Project spectrum: preschool assessment handbook. ERIC Report: ED 433095.
Liu, P. (2002). School ecology and learning of young children: Educational approach at a pre school in P.R. China. Kappa Delta Pi Record, 38(3): 119-123.
McIntire, J. (2007). Developing literacy through music. Teaching Music, 15(1): 44-48.
Merrefield, G. E. (1997). Three Billy Goats and Gardner. Educational Leadership, 55(1): 58-61.
Ministry of Education, P.R. China (2001). A guide to curriculum for preschool education. Beijing: Beijing Normal University Press.
National People's Congress, P. R. China (2006). Compulsory education in P. R. China (revised). Beijing: Xinhua Press.
Ogle, D. M. (1986). K-W-L: A teaching model that develops active reading of expository text. The Reading Teacher, 39, 564-570.
Ogle, D. M. (1989). The know, want to know, learn strategy. In K. D. Muth (Ed.), Children's comprehension of text: Research into practice (pp. 205-223). Newark, DE: International Reading Association.
Piaget, J. (1969). The psychology of intelligence. Paterson, NJ: Littlefield, Adams.
Rogers, A. (2008). Arts Infused Education 2008. ERIC document: ED501348.
Shi, Y. (2009). Theory and thoughts on curriculum in preschool education in China. China education and research network. Beijing: People's Education Press.
Souto-Manning, M. & James, N. (2008). A multi-arts approach to early literacy and learning. Journal of Research in Childhood Education, 23(1): 82-??
Turner, T. (2008). The bear is still singing: Creating lyrics with social studies. Social Studies and the Young Learner: 21 (1): 11-14.
Vialle, W. (1997). In Australia: Multiple intelligences in multiple settings. Educational Leadership, 55(1): 65-69.
Vygotsky, L.S. (1978). Mind in society. Cambridge, MA: Harvard University Press.

Appendix A
Rubric to Score Children's Drawing

3	Picture as clear presentation of what it was intended to; demonstrated excellent artistic skills, art sheet is very clean and neat
2	Picture as fair presentation of what it was intended to; demonstrated good artistic skills; art sheet fairly clean and neat
1	Picture primarily made of scribbles; organization is limited; lack of motor skills; difficult to interpret the completed artwork
0	Random scribbling or no drawing at all

Appendix B
Rubric to Score a Child's Oral Communication about Drawing

3	Stayed focused in responding to or describing the artwork; response accurate and coherent; clear articulation with fluency
2	Provided response related to the artwork fairly well; description relevant and sensible; fairly clear articulation with some fluency
1	Provided response somewhat relevant to the artwork; articulation understandable but with limited fluency or elaboration
0	Provided no verbal response to the artwork or articulation unclear or irrelevant